

LISTING OF CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application.

1. (Withdrawn, previously presented) A device for measuring the binding of a first partner in an interaction to a second partner in said interaction, wherein said interaction partners are molecular entities, said device comprising:
 - a) an opaque temperature-controlled chamber having a centrifuge rotor therein, said rotor having at or near the periphery of the rotor and attached thereto at least one radially positioned transparent reaction well, said reaction well having on an upper surface thereof an aperture for the addition of reagents to the reaction well, said reaction well further including on an internal surface thereof at the end closest the axis of said rotor at least one attachment zone for said second interaction partner and said well having a sufficient length to provide an area for the at least one attachment zone and an area positioned at the end of the well into which the solution or solutions via which the second interaction partner were applied can be displaced by centrifugal force;
 - b) a system for detecting light emitted or absorbed by said first interaction partner or an indicator molecule bound thereto; and
 - c) means for controlling the temperature of said chamber and the operation of said rotor.
2. (Withdrawn) The device of claim 1, wherein said chamber has a lid or scalable opening to allow loading of reaction wells.
3. (Withdrawn, previously presented) The device of claim 1, wherein said temperature control is effected by providing a heater linked to a temperature sensor so that a set temperature can be maintained.
4. (Withdrawn) The device of claim 1, wherein said temperature control includes a cooling system.
5. (Withdrawn) The device of claim 1, wherein said rotor comprises a flat disc of a plastic or metal material having said at least one reaction well fitted therein.

6. (Withdrawn) The device of claim 1, wherein said rotor has from 1 to 96 reaction wells.
7. (Withdrawn) The device of claim 1, wherein said at least one reaction well is manufactured from polypropylene or polycarbonate.
8. (Withdrawn) The device of claim 1, wherein said at least one reaction well is cylindrical or a rectangular prism.
9. (Withdrawn) The device of claim 1, wherein said at least one reaction well is angled upwards toward the periphery of the rotor.
10. (Withdrawn) The device of claim 1, wherein said attachment zone is provided by spotting the second interaction partner onto said internal surface of the reaction well.
11. (Withdrawn) The device of claim 1, wherein said attachment zone is provided by way of said second interaction partner being linked to a magnetic particle which is held in the attachment zone by a magnet.
12. (Withdrawn) The device of claim 1, wherein said attachment zone is circular with a diameter of 50 μ m to 3 mm.
13. (Withdrawn) The device of claim 1, wherein said drive means is a direct-coupled AC motor, a DC motor or stepper motor with the motor external to the chamber.
14. (Withdrawn, previously presented) The device of claim 1, wherein said system for detecting light comprises an LED, a laser light source or a halogen lamp.
15. (Withdrawn) The device of claim 1, wherein said device further includes a computer for controlling an operation selected from the group consisting of rotor speed, chamber temperature, time and temperature for annealing and polymerization steps when the binding assay is a hybridization, rotor braking, rotor vibration, and data processing.
16. (Previously presented) A method of measuring the binding of a first partner in an interaction to a second partner in said interaction, wherein said interaction partners are molecular entities, said method comprising the steps of
 - a) delivering a quantity of said second interaction partner to a reaction well of a device for attachment of said second interaction partner to an attachment zone of said reaction well, wherein said device comprises

- i. an opaque temperature-controlled chamber having a centrifuge rotor therein, said rotor having at or near the periphery of the rotor and attached thereto at least one radially positioned transparent reaction well, said reaction well having on an upper surface thereof an aperture for the addition of reagents to the reaction well, said reaction well further including on an internal surface thereof at the end closest the axis of said rotor at least one attachment zone for said second interaction partner and said well having a sufficient length to provide an area for the at least one attachment zone and an area positioned at the end of the well into which the solution or solutions via which the second interaction partner were applied can be displaced by centrifugal force;
 - ii. a system for detecting light emitted or absorbed by said first interaction partner or an indicator molecule bound thereto; and
 - iii. means for controlling the temperature of said chamber and the operation of said rotor;
- b) adding a solution comprising a quantity of said first interaction partner to said attachment zone and incubating at a temperature and for a time sufficient to allow binding of said first interaction partner to said second interaction partner;
- c) rotating said device rotor at a speed sufficient to displace the solution comprising unbound first interaction partner from said attachment zone; and
- d) measuring the amount of said first interaction partner bound to said second interaction partner via the fluorescence or absorbance of said first interaction partner or an indicator molecule bound thereto.

17. (Original) The method of claim 16, wherein said first and second interaction partners are respectively selected from the group consisting of the following combinations: an antibody and an antigen; an antigen and an antibody; an enzyme and a substrate; an oligopeptide and a protein; a hormone and a receptor; an effector molecule and a receptor; a nucleic acid and a nucleic acid; an oligonucleotide and a nucleic acid; and, a synthetic organic compound and a protein.

18. (Original) The method of claim 16, wherein said first and second interaction partners are delivered as solutions containing other components selected from the group consisting of

buffers, salts, DNA or RNA polymerization reagents including a polymerase, and a blocking reagent.

19. (Previously presented) The method of claim 16, wherein step (b) is carried out with the rotor rotating at a speed of up to 500 rpm.
20. (Original) The method of claim 16, wherein step (c) is carried out with the rotor totaling at a speed of greater than 500 rpm.
21. (Withdrawn) The method of claim 16, wherein said first interaction partner has a fluorophore bound thereto selected from the group consisting of FAM, JOE, ROX, TAMRA, Cy5, Cy3, Cy5.5, and VIC.
22. (Withdrawn) The method of claim 16, wherein said first interaction partner has a Dabcyl or BH quencher absorbent group bound thereto.
23. (Original) The method of claim 16, wherein said indicator molecule is an intercalating dye.
24. (Original) The method of claim 23, wherein said intercalating dye is Sybr green.
25. (Withdrawn) The method of claim 16, wherein said the indicator molecule is a derivatised antibody.
26. (Original) The method of Claim 16, wherein in step (d) said absorbance or fluorescence is measured with the rotor rotating at a speed of at least 500 rpm.
27. (Original) The method of claim 16, wherein said at least one reaction well has multiple attachment zones and measurement of the amount of said that interaction partner bound to said second interaction partner via the fluorescence or absorbance of said first interaction partner or an indicator molecule bound thereto is by way of multiple detectors.
28. (New) The method of claim 16, wherein the temperature control of said chamber is effected by a heater linked to a temperature sensor.
29. (New) The method of claim 28, wherein the temperature control of said chamber is further effected by a cooling system.